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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/581,948

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Klaus Hahn

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EXAMINER

NEGRELLI, KARA B

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

10/16/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/581,948

Applicant(s)

HAHN ET AL.

Examiner

KARA NEGRELLI

Art Unit

1796

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 1-4, 6, 9 and 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 5, 7-8, 10-11, and 13-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB008)
- Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

**MOLDABLE FOAM MOLDINGS COMPOSED OF EXPANDABLE STYRENE
POLYMERS AND MIXTURES WITH THERMOPLASTIC POLYMERS**

DETAILED ACTION

Response to Amendment

Response to Amendment

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Any rejections stated in the previous Office Action and not repeated below are withdrawn.
3. The new grounds of rejection set forth below are necessitated by applicant's amendment filed on September 23, 2009. In particular, new claims 13-16 have been added. 1-4, 6, 9, and 12 were previously withdrawn.
4. No new rejections were made with regards to previously presented claims. New rejections were only made over newly presented claims. For this reason it is proper to make the present action FINAL.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 5, 7, 10-11, 13 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Henn et al. (US 5,525,637).
3. It is noted that while claims 5 and 7 claim a polystyrene, the claims are recited in the product-by-process format by use of the language, "A process...comprising...a polymer mixture comprising 50 to 90% by weight of polystyrene B selected from **free-radical polymerized** glass-clear polystyrene (GPPS) or **anionically polymerized** polystyrene..." Case law holds that:

Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. See *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

4. To the extent that the process limitations in a product-by-process claim do not carry weight absent a showing of criticality, the reference discloses the claimed product in the sense that the prior art product structure is seen to be no different from that indicated by the claims.
5. Henn et al. teach expandable styrene polymers comprising a mixture of from 50 to 85% by weight of (a) polystyrene and from 15 to 50% by weight of (b) styrene-acrylonitrile copolymer (column 3, lines 41-51). The styrene polymers are prepared by mixing the components in a melt using an extruder, where during addition of (d) a blowing agent (column 2, lines 31-32), the extrudate must be cooled so rapidly after extrusion so that foaming does not occur (column 5, lines 1-5). The resultant styrene polymer is subsequently comminuted, usually by granulation (column 5, lines 5-6).
6. Henn et al. teach that the mixing of components (a) and (b) can be carried out, particularly by extrusion (column 5, lines 25-26). The styrene polymer must be

subsequently impregnated with a blowing agent (column 5, lines 27-28). This is achieved by adding the blowing agent to the molten polymer during extrusion (column 5, lines 29-30). The resultant polymers are comminuted to sizes of from 0.1 to 6 mm (preferably 0.4 to 3 mm) (column 5, lines 34-36). This is carried out by granulation after extrusion (column 5, lines 36-37). The particles are usually in bead form or pellet form (column 5, lines 38-39). The granules then are suspended in a liquid, usually water (column 5, lines 40-41). Henn et al. do not specify at what pressure pelletizing is performed. One of ordinary skill in the art would recognize that because no pressure is specified, the process is expected to be performed at atmospheric pressure (1 bar).

7. Henn et al. further teach that components (a) 100 parts by weight polystyrene (84.7% by weight) and (b) 18 parts by weight styrene-butadiene-styrene block copolymer (15% by weight) are mixed at a temperature of 180 °C in an extruder (column 6, lines 36-41). The mixture was forced through a die plate having 1 mm bores (column 6, lines 42-43). The extrudates were solidified in water and granulated into particles (beads or pellets) (column 6, lines 43-45). The beads had a density of 23.8 g/L (column 7, line 4).

8. As to claim 13, Henn et al. teach that the expandable styrene are exposed to hot air or steam (steam of which has a minimum temperature of 100°C) and the foam particles can be expanded further by re-heating after cooling (column 5, lines 55-60).

9. Henn et al. further teach that the formed expandable styrene particles can be welded to form moldings (column 5, lines 60-61, relevant to instant claim 7), and the moldings have a density of from 5 to 70 g/L (column 5, line 63).

10. Instant claims 10-11 state properties of the polymer mixture formed in claim 7: a polydispersity of less than 3.5 (instant claim 10) and particularly, a polydispersity of from 1.5 to 2.8 (instant claim 11). Henn et al. do not elaborate on the properties recited in claims 10-11. However, since the same composition that is disclosed in instant claim 7 (by the same method disclosed in instant claims 7) is taught in Henn et al., one of ordinary skill in the art would expect that the composition of Henn et al. would have the same properties (polydispersity) as the composition disclosed in claim instant claim 7.
11. Henn et al. further teach the composition as applied to claim 5 above and further teach that the components are mixed at 180°C in an extruder and subsequently forced through a die plate. If the components are mixed at 180°C and subsequently forced through a die, the temperature of polymer melt, when passed through the die plate, would fall within the range of instant claim 15.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Henn et al. (US 5,525,637).

14. Henn et al. further teach that styrene polymers of the invention have a mean molecular weight M_w of from 100,000 to 200,000 (column 3, lines 1-4).
15. The reference differs from claim 8 by failing to disclose an example falling within the claimed range, and by failing to disclose a range with sufficient specificity to anticipate the claimed range. However, the reference teaches a range that overlaps the claimed range, and it has been held that overlapping ranges are sufficient to establish *prima facie* obviousness. See MPEP 2144.05.
16. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected from the overlapping portion of the range taught by the reference because overlapping ranges have been held to establish *prima facie* obviousness.
17. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henn et al. (US 5,525,637) and further in view of Glück et al. (US 6,340,713).
18. Henn et al. teach the process as applied to claim 1 above but do not expressly teach that the polymer melt comprising the blowing agent downstream of the die plate under water is pelletized at a pressure of from 5 to 15 bar.
19. However, Glück et al. teach a mixture comprising molten polystyrene which is passed through a die plate at 180°C and the molten mixture of which, after coming out of the die, is granulated under a pressure of 5 bar (column 7, lines 18-23). The granulation can be carried out underwater (column 3, lines 20-21).

20. It would have been obvious for one of ordinary to granulate the polystyrene mixture of Henn et al. under a pressure of 5 bar as taught in Glück et al. in order to avoid premature foaming (column 3, lines 19-21).

21. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Henn et al. (US 5,525,637) and further in view of Loo (US 4,284,553).

22. Henn et al. teach the process as applied to claim 5 above but do not expressly teach that the temperature of the die plate is from 20 to 100°C above the temperature of the polymer melt comprising blowing agent.

23. However, Loo teaches a process for extruding and granulating thermoplastic material through an extruder or melt pump having an extrusion die including a die face plate which forms or is provided with an insulation member, the die plate being provided with extrusion holes for the extrusion therethrough of melted thermoplastic material, and a means for cutting the extruded material into granules (column 1, lines 59-68). Loo et al. further teach that when the apparatus is in operation, the temperature of the die plate is above the boiling point of the cooling water (above 100°C) (column 3, lines 4-6). This temperature overlaps 20 to 100°C above of the temperature of the molten polymer. It is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir. 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16

USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974).

24. It would have been obvious at the time the invention was made to use a die plate with a temperature 20 to 100°C above the temperature of the polymer melt as taught in Loo in the process of Henn et al. in order to ensure that the polymer being extruded is kept uniformly heated and flowable (column 3, lines 10-13) and to further prevent chilling the thermoplastic below its solidification temperature (column 6, lines 24-25).

Response to Arguments

25. Applicant's arguments filed September 23, 2009 have been fully considered but they are not persuasive.

26. Applicant argues the mixture disclosed in the Henn et al. comprises from 5 to 30% of at least one styrene-soluble elastomer and 5 to 20% by weight of at least one block copolymer containing styrene as one component and asserts that because these components are necessary, the thermoplastic material produced by the claimed invention is entirely different from the polystyrene foams of Henn et al.

27. Applicant's argument is not persuasive. Instant claim 5 uses the open language "comprising," which defines the scope of a claim with respect to what unrecited additional components or steps, if any, are excluded from the scope of the claim. The transitional term "comprising" is inclusive or open-ended and does not exclude additional, unrecited elements or method steps. See MPEP 2111.03 [R-3]. Furthermore, components (a) and (b) of Henn et al. are components recited in instant claim 5: "from

50 to 90% by weight of polystyrene B selected from free-radical-polymerized glass-clear polystyrene (GPPS) or anionically polymerized polystyrene (APS), and from 10 to 50% by weight of styrene copolymer A selected from styrene-butadiene block copolymer, styrene- α -methylstyrene copolymer, acrylonitrile-butadiene-styrene, styrene-acrylonitrile, acrylonitrile-styrene-acrylate, methacrylate-butadiene-styrene, or methyl methacrylate-acrylonitrile-butadiene-styrene polymers." These components are present in the teachings of Henn et al. While Henn et al. may further comprise an elastomer, this additional component does not render the composition of Henn et al. "entirely different" than the instantly disclosed composition, as the instantly disclosed composition uses the transitional phrase "comprising."

28. Applicant further argues that the resulting product of the instant application is different than the composition from the disclose of Henn et al., specifically pointing out that in *Abbot Laboratories v. Sandoz Inc.*, ___ F.3d ___ (Fed. Cir. 2009) (Rader, J.) (partially *en banc*) (citations omitted), the Federal Circuit recently overruled the prior precedent of *Scripps Clinic & Research Foundation v. Genetech, Inc.* 927 F.2d 1565 (Fed. Cir. 1001) (Newman, J.), and determined that "[e]ach element contained in a patent claim is deemed material to defining the scope of the patented invention" (quoting *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 19 (1997)).
29. Applicant states that in the present case, when each element of the expandable, palletized thermoplastic polymer materials is considered, the claimed invention, including claim 8, is novel and unobvious over Henn et al.

30. Applicant's argument is not persuasive. It is acknowledged that the Federal Circuit recently overruled the prior precedent of *Scripps Clinic & Research Foundation v. Genentech, Inc.* 927 F.2d 1565 (Fed. Cir. 1001) (Newman, J.), and determined that "[e]ach element contained in a patent claim is deemed material to defining the scope of the patented invention" (quoting *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 19 (1997)). It is further noted what *Abbot Laboratories v. Sandoz Inc.* recites is that the "inventor is free to use process steps to define claimed product if its structure is either not fully known or too complex to analyze."

31. In the current application, this is not the case. Polystyrene is known and not too complex to analyze. Furthermore, free-radical polymerization and anionic polymerization are common methods of forming polystyrene. See, for example, Priddy, Duane. "Polystyrene." *Encyclopedia of Polymer Science and Technology*, John Wiley and Sons, Inc. Volume 4 (2002): pages 281-283, which is attached. Priddy teaches that polystyrene can be produced by a variety of mechanisms (free-radical polymerization and anionic polymerization).

32. While Henn et al. do not expressly teach that the polystyrene of the disclosed invention is free-radical polymerized glass-clear polystyrene or anionically polymerized polystyrene, applicant has not provided evidence of how the polystyrene of Henn et al. is different than the polystyrene of the instantly claimed invention, and therefore has not provided sufficient evidence that the product of Henn et al. (which comprises polystyrene-containing copolymers which are identical to those claimed in the instant invention) is different that the instantly claimed product.

Conclusion

33. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
34. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARA NEGRELLI whose telephone number is (571)270-7338. The examiner can normally be reached on Monday through Friday 8:00 am EST to 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571)272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KARA NEGRELLI/
Examiner, Art Unit 1796

/Randy Gulakowski/
Supervisory Patent Examiner, Art Unit 1796